

39-Year-Old Man With Voiding Symptoms

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CASE REPORT

A 39-year-old white man presents with a long history of lower urinary tract symptoms. He admits to both irritative and obstructive voiding symptoms, which have persisted most of his adult life. He denies any history of sexually transmitted disease, urinary tract infections, or trauma or surgery of the lower urinary tract.

The patient's self-administered International Prostate Symptom Score (IPSS) is 24 of a possible 35 points. He performs 2 voids, which demonstrate a maximum flow rate of 11.8 mL/s with a voided volume of 368 mL (Figure 1) and 9.8 mL/s with a voided volume of 195 mL. Residual urine as determined by ultrasound is 75 mL. Physical

examination is unremarkable, and digital rectal examination reveals a small prostate of approximately 25 g to 30 g. Urinalysis is essentially negative. Serum prostate-specific antigen level is measured and found to be 1.1 ng/mL.

A trial of tamsulosin, 0.4 mg daily, is initiated. After 4 weeks of treatment, the patient returns to the office and reports marginal improvement in his symptoms. A doubling of the dosage is suggested, and tamsulosin, 0.8 mg daily, is taken for an additional 4 weeks. Upon his return visit, the patient complains of absent ejaculation, which is disturbing to him. His symptoms have not improved further, and his IPSS is now 19 points (moderate to severe).

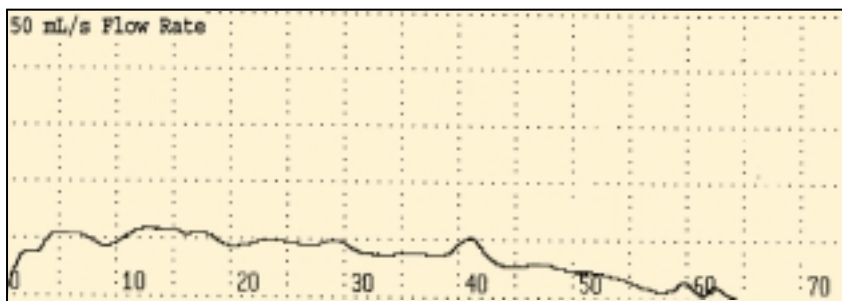


Figure 1. Typical free flow rate recording in a patient with bladder neck obstruction, demonstrating a maximum flow rate of 11.8 mL/s and a prolonged voiding time of 64 seconds.

PATIENT MANAGEMENT

Which statement regarding management of this patient is most accurate?

- ☐ 1. The patient is likely to experience additional symptom improvement by increasing the tamsulosin dosage to 1.2 mg daily.
- ☐ 2. The patient should be switched to another α -blocker to achieve further symptom improvement.
- ☐ 3. A 5- α -reductase inhibitor should be added to the treatment regimen.
- ☐ 4. The absent or retrograde ejaculation is not a class effect of α -blockers.
- ☐ 5. Absent ejaculation signals treatment efficacy in patients with lower urinary tract symptoms treated with tamsulosin.

The next most appropriate step in the management of this patient would be:

- ☐ 1. Flexible urethrocystoscopy in the office to rule out a urethral stricture
- ☐ 2. One-month treatment course with a quinolone antibiotic
- ☐ 3. Videourodynamics
- ☐ 4. Cystometrogram
- ☐ 5. Transurethral resection of the prostate

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Discussion of Last Issue's Case Scenario

IN THE LAST ISSUE, DR SHAPIRO PRESENTED THIS CASE REPORT:

A 3-month-old boy has a febrile urinary tract infection. The right kidney is duplicated and measures 5.5 cm with moderate dilation of the upper pole moiety and minimal dilation of the lower pole system (Figures 1 and 2). The left kidney is also duplicated (Figure 3). The left upper pole is moderately dilated, whereas the lower pole moiety is massively hydronephrotic with thin parenchyma. There is left ureteral dilation. The bladder shows evidence of bilateral ureterocele (Figure 4). The voiding cystourethro-

gram shows right grade III-IV/V and left grade V/V vesicoureteral reflux associated with the lower pole moieties (Figure 5). The early phase of the MAG-3 (mercaptotriglycylglycine) scan shows no function of the left upper pole (Figure 6). The left lower pole moiety contributes less than 10% to the total renal function. The right upper pole moiety has no function, whereas the lower pole functions normally. Following parenteral antibiotic therapy, antibiotic prophylaxis is begun.



Figure 1. Right renal sonogram shows significant hydronephrosis in the upper and lower pole moieties.

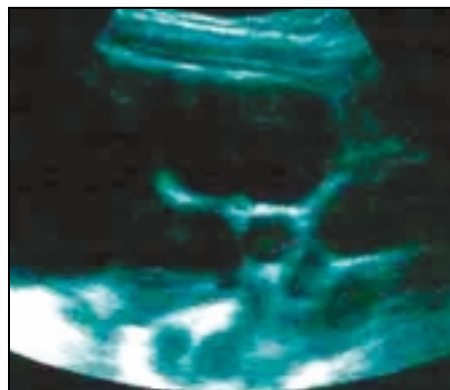


Figure 3. Left renal sonogram shows massive hydronephrosis of the entire renal unit.



Figure 2. Right renal sonogram shows marked calyceal dilation of the lower pole moiety.

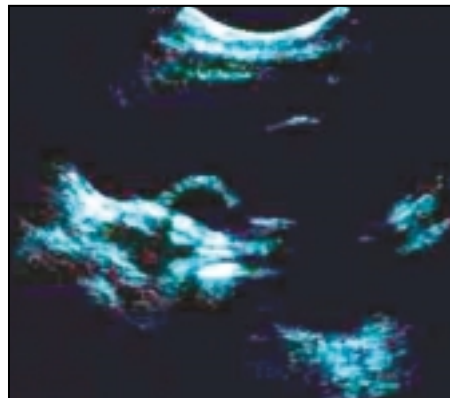


Figure 4. Bladder sonogram demonstrates bilateral ureteroceles.



Figure 5. The postvoid film of the voiding cystourethrogram showing right grade III-IV/V and left grade V/V vesicoureteral reflux associated with the lower pole moieties.

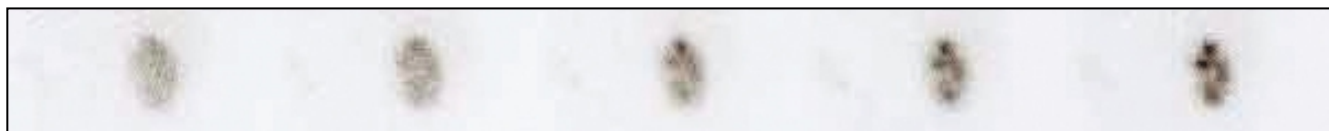


Figure 6. MAG-3 scan: The early phase shows no function of the right or left upper pole systems. Only minimal function is observed in the left lower pole.

THE FOLLOWING MANAGEMENT OPTIONS WERE OFFERED:

- ☐ 1. Incision of ureteroceles
- ☐ 2. Left nephrectomy only
- ☐ 3. Incision of right ureterocele and left nephrectomy
- ☐ 4. Left nephrectomy and right double-barrel reimplant
- ☐ 5. Left nephrectomy and right upper pole nephrectomy

AUTHOR'S DISCUSSION

The management of ureteroceles has evolved over the past 2 decades. There are 3 major treatment options for ectopic ureteroceles associated with a duplex collecting system: endoscopic management, partial nephrectomy and ureterocele aspiration, and complete urinary tract reconstruction (partial nephroureterectomy, ureterocele excision, or marsupialization with simultaneous ureteral reimplantation).¹⁻¹² Whereas endoscopic incision or puncture for intravesical ureteroceles has a success rate of greater than 90%, the procedure is less successful for ectopic ureteroceles. In one series, reflux developed in 63% of upper pole systems and obstruction persisted in 11%. Only 24% of patients with ectopic ureteroceles had resolution of their obstruction and did not develop reflux. Of those patients, most required an open procedure for persistent reflux and only 1 in 17 (6%) responded to endoscopic therapy alone.^{1,2}

Husmann^{1,2} has recommended that ectopic ureteroceles be incised in the following cases: 1) when an infant has an obstructed and infected upper pole system, 2) in the rare neonate who has progressive renal failure as a result of bladder outlet obstruction caused by an ectopic ureterocele, and 3) as part of a planned multistaged procedure providing decompression of the ureterocele in the neonate and delaying surgical reconstruction to at least 12 months of age. Husmann also formulated criteria defining which patients will require additional surgery following nephroureterectomy for a nonfunctioning upper pole moiety. He demonstrated that the need for additional surgery is directly proportional to 3 factors: 1) the number of ureteroceles present, 2) the number of renal moieties with vesicoureteral reflux, and 3) the grade of reflux.

Approximately 87% of patients with 1 or 2 ureteroceles and no reflux present on the initial voiding cystourethrogram (VCUG) will need no further surgery following partial nephrectomy.^{2,8,9,11} Partial nephrectomy will not cure all cases of grade I and II reflux; 25% of these patients will develop reflux following surgery. In patients with delayed onset of reflux, half will spontaneously resolve their reflux within 2 years and the remainder will require surgical intervention.^{7,8,11} Among patients with low-grade reflux (ie, grade II/V or less) into a single renal moiety demonstrated on the preoperative VCUG, 60% are cured by partial nephrectomy alone. In the series by Husmann and colleagues,² partial nephroureterectomy alone cured only 2 (4%) of 45 patients in whom high-grade reflux or reflux into more than 1 renal moiety was found on the initial VCUG. These findings suggest that partial nephroureterectomy alone is an excellent treatment modality for

patients with ureteroceles not associated with reflux or with low-grade reflux into 1 renal moiety on the initial VCUG.

A third approach to the duplex system with ectopic ureterocele is complete surgical reconstruction.¹ The incidence of additional surgery after partial nephrectomy has been found by some investigators to be as high as 70%, leading to the recommendation of complete urologic reconstruction that includes partial nephroureterectomy, ureterocele excision, or marsupialization with simultaneous ureteral reimplantation.^{2,9,10} Scherz and colleagues⁹ noted a success rate of 86% (24 of 28 patients) using this manage-

For patients older than 18 months at diagnosis, complete urinary tract reconstruction is the best approach in most cases.

ment strategy, with only 4 patients needing additional procedures because of persistent reflux. The problem with this approach is that not all patients with an ectopic ureterocele will ultimately need complete reconstruction. More important, there are 3 major risks associated with this approach: 1) the devitalization of the lower pole ureter, 2) injury to the continence mechanism of the bladder, and 3) the development of fistulas.^{1,10,11,13,14} The 1-stage approach does not permit reassessment of the patient following partial nephrectomy with the possible resolution of reflux.

Patients with ectopic ureteroceles should have individualized treatment plans based on age, function of the renal moieties, number of involved units with reflux, and grade of reflux. If upper pole moieties are functional, a pyeloplastomy or ureteroureterostomy can be performed.¹ The size discrepancy between the upper and lower pole ureters and whether the lower pole pelvis is intrarenal in location will dictate the optimal procedure. For patients older than 18 months at diagnosis, complete urinary tract reconstruction is the best approach in most cases.^{1,2} In children younger than 18 months with associated high-grade reflux and a ureterocele, ureterocele puncture is performed as part of a planned reconstruction. In children younger than 3 months with a nonfunctioning upper pole and no or low-grade reflux, antibiotic therapy is begun and partial nephroureterectomy is performed at 3 to 6 months of age. Puncture of a ureterocele when there is only low-grade or no reflux is not prudent, because it will result in iatrogenic reflux in 50% to 60% of patients.^{1,2,4}

The infant in our clinical scenario has 3 of 4 renal moieties that are nonfunctioning. The issue at hand is how to best surgically approach this patient in order to perform the fewest number of surgeries that will render him unobstructed, with no reflux, and infection-free. The patient has 2 ureteroceles and high-grade reflux. In this setting, surgical management should be staged. Because the right upper pole ureter is not dilated and the right lower pole system does not appear to contribute to excess urinary stasis leading to infection, one would presume that the massive left reflux associated with the lower pole is the culprit. Although puncture of the ureterocele has gained wide popularity as part of a multistaged surgical approach, it is unlikely that incision of the ureterocele(s) alone would be of benefit, because the goal on the left is not reflux improvement or salvage of the upper pole moiety. If only the right ureterocele was present and the left kidney was essentially normal, incision of the right ureterocele may positively affect the reflux in the right lower pole moiety. No harm would be done, and either right partial nephrectomy could be performed at around 6 months of age, when the hematocrit again rises to its normal level in this age group, or a right lower pole ureteral reimplant and excision of the ureterocele could be performed electively at 1 year; reimplantation is rarely undertaken electively in infants younger than 1 year because of bladder size. Partial nephrectomy is not always necessary when there is nonfunction, because the duplicated ureters and ureterocele excision can be addressed at the bladder level, obviating the need for an additional flank procedure.

The first step in this patient's management, therefore, would be left nephrectomy. This can be accomplished, as in our case, laparoscopically or can be performed as an open procedure. The ureter associated with the ureterocele was

irrigated and left open to drain while the refluxing ureter was ligated. Prior to the laparoscopy, we performed cystoscopy. The left ureterocele was so large that the inferomedial aspect of the right ureterocele was obscured and not easily defined. For this reason, no right ureterocele incision or puncture was attempted. I prefer to avoid partial nephrectomy when possible, especially in a setting such as this, in which open bladder surgery with a right double-barrel reimplant and excision of both ureteroceles and left distal ureters at about 12 to 18 months of age can complete the urinary tract reconstruction. ■

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